REMARKS

Applicants affirm the election of claims 1-14 and 20-23 made by telephone on June 18, 2002.

The Examiner objected to the abstract. The abstract has been amended to delete the sentence objected to by the Examiner.

Claims 1-3, 7, 9-14, and 20-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Fujii, EP 0 743 727 A1 (hereinafter "Fujii"). The Examiner states "Fujii is silent about selecting the facet orientation to control a field strength of a piezoelectric field therein. However, it is inherent that the selection of the facet orientation control the field strength of a piezoelectric field because the growth orientation of the strained quantum well layer is tilted a few degrees from the (0001) direction."

Applicants respectfully traverse the rejection. Claim 1 recites "*selecting* a facet orientation of said III-Nitride quantum well layer to control a field strength of a piezoelectric field therein." Fujii clearly does not select the facet orientation of a quantum well layer to control a field strength of a piezoelectric field; in fact, Applicants can find no mention of piezoelectric fields in Fujii. Rather, Fujii selects a facet orientation that is suitable for selectively growing a resonance structure, in order to correct the problems with prior art devices, such as the difficulty of forming resonance faces, set forth in column 1, line 53 to column 2, line 18.

The test for inherency is set forth in MPEP section 2163.07(a), quoting *In re Robertson*: "To establish inherency, the extrinsic evidence '*must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.* Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." Emphasis added, citations omitted. As an

PATENT LAW
GROUP LLP
2635 N. FIRST ST.
SUITE 223
SAN JOSE, CA 95134
(408) 382-0480
FAX (408) 382-0481

example, for the step of "selecting the color of an apple" to inherently include the step of "selecting the flavor of an apple," the selection of a green apple must always result in the same flavor, and the relationship between color and flavor must be known to a person of ordinary skill. Accordingly, in order for Fujii to inherently teach "selecting a facet orientation . . . to control a field strength of a piezoelectric field" as recited in claim 1, Fujii's selection of a facet orientation to selectively grow a resonance face must always and necessarily result in the same effect on piezoelectric field, and the relationship between the effect on the formation of resonance faces and the piezoelectric field strength must be recognized by a person of ordinary skill.

Neither the Examiner nor Fujii provide any evidence of a relationship between the effect of facet orientation on piezoelectric field and the effect of facet orientation on forming resonance faces. Fujii gives one example of a facet orientation that may result in a favorable effect on both the formation of a resonance face and the piezoelectric field. Nothing in Fujii or provided by the Examiner suggests that other facet orientations which create the same favorable result for the formation of a resonance face would have the same result on piezoelectric field.

Further, even if such a relationship were to exist, there is no evidence that a person of skill in the art would recognize the relationship. Such recognition is required by the above-quoted standard for establishing inherency. In fact, the teachings of the present application and Fujii suggest that a person of skill in the art would expect that there would be no inherent relationship between selecting the facet orientation to control a field strength of a piezoelectric field and selecting a facet orientation for selective growth of a resonance face. For example, the present application teaches at page 5 lines 8 and 9 that the strength of the piezoelectric field depends on the *strain in and the composition of* the InGaN strained quantum well layer. In contrast, Applicants can find no mention in Fujii of the effect of either

PATENT LAW
GROUP LLP
2635 N. FIRST ST.
SUITE 223
SAN JOSE, CA 95134
(408) 382-0480
FAX (408) 382-0481

composition or strain on the facet orientation chosen for selectively growing a resonance face. Accordingly, a person of skill in the art would expect that there would be no relationship between selecting a facet orientation to control a strength of a piezoelectric field and selecting a facet orientation for selective growth of a resonance face, since the piezoelectric field depends on the composition of and strain in the quantum well layer, while the appropriate facet orientation for selective growth of a resonance face apparently does not depend on either composition or strain.

The Examiner cites Cardidi, U.S. Patent 4,952,792 as evidence "to show that Fujii inherently teaches controlling the field strength of the piezoelectric field (col. 3, lines 9-40)." Cardidi merely points out that electric polarization is related to strain. Cardidi never supplies a connection between the effect of facet orientation on piezoelectric field and the effect of facet orientation on selective formation of a resonance face. Thus, Cardidi adds nothing to the deficiencies of Fujii.

Since the Examiner has presented no evidence of an inherent relationship between the selection of a facet orientation to control a piezoelectric field and the selection of a facet orientation for selective growth of a resonance face or that that a person of skill in the art would recognize any such inherent relationship, claim 1 is patentable over Fujii and Cardidi. Claims 2, 3, 7, and 9-14 depend from claim 1 and are therefore allowable for at least the same reasons.

Claim 20 recites "selecting a facet orientation of said III-Nitride quantum well layer to control a field strength of a spontaneous electric field therein" and claim 22 recites "selecting a facet orientation of said III-Nitride quantum well layer to reduce a magnitude of a combined field strength of a piezoelectric field and a spontaneous electric field therein." An analysis similar to that recited above for claim 1 can be applied to claims 20 and 22. The Examiner presents no evidence of an inherent relationship between the selection of facet orientation to

PATENT LAW
GROUP LLP
2635 N. FIRST ST.
SUITE 223
SAN JOSE, CA 95134
(408) 382-0480
FAX (408) 382-0481

control spontaneous electric field and the selection of a facet orientation for selective growth of a resonance face. The Examiner presents no evidence of an inherent relationship between the selection of facet orientation to reduce the combined strength of a piezoelectric field and a spontaneous electric field and the selection of a facet orientation for selective growth of a resonance face. Accordingly, claims 20 and 22 are allowable over Fujii and Cardidi. Claim 21 depends from claim 20 and is therefore allowable for the same reason.

Applicants thank the Examiner for indicating that claims 4-6, 8 and 23 are allowable.

In view of the above arguments, Applicants respectfully request allowance of claims 1-14 and 20-23. Should the Examiner have any questions, the Examiner is invited to call the undersigned at (408) 382-0480.

EXPRESS MAIL LABEL NO: EV 342554919 US

Respectfully submitted,

R Leiterman

Rachel V. Leiterman
Attorney for Applicants
Reg. No. 46,868

PATENT LAW
GROUP LLP
2635 N. FIRST ST.
SUITE 223
SAN JOSE, CA 95134
(408) 382-0480
FAX (408) 382-0481

ATTACHMENT A

IN THE ABSTRACT

The abstract is amended as follows:

A method for fabricating a light-emitting semiconductor device including a III-Nitride quantum well layer includes selecting a facet orientation of the quantum well layer to control a field strength of a piezoelectric field and/or a field strength of a spontaneous electric field in the quantum well layer, and growing the quantum well layer with the selected facet orientation. The facet orientation may be selected to reduce the magnitude of a piezoelectric field and/or the magnitude of a spontaneous electric field, for example. The facet orientation may also be selected to control or reduce the magnitude of the combined piezoelectric and spontaneous electric field strength. ~~As a result of the reduced magnitude of piezoelectric, spontaneous, or combined piezoelectric and spontaneous electric field strengths in their quantum well layers, light-emitting devices in accordance with the present invention may generate light with increased efficiency compared to prior art devices.~~

PATENT LAW GROUP LLP
2635 N. FIRST ST.
SUITE 223
SAN JOSE, CA 95134
(408) 382-0480
FAX (408) 382-0481